WHAT IS CLAIMED IS:

1. A film phantom system for recording and verifying three-dimensional dose distributions, the film phantom system comprising:

a body of tissue-equivalent material, the body surrounding a cavity capable of receiving a stack of sheets of film separated by tissue-equivalent spacers;

the cavity having walls, the walls including at least one translucent area which extends through at least one opaque area of the walls, the at least one translucent area configured to intersect edges of different sheets of film in a stack of sheets of film in the chamber at different locations.

2. A film phantom system according to claim 1 wherein the cavity is rectilinear.

3. A film phantom system according to claim 2 wherein the at least one translucent area comprises at least one translucent strip.

4. A film phantom system according to claim 3 wherein the at least one translucent strip comprises a first translucent strip extending across a first face of the chamber parallel to an edge of the face.

5. A film phantom system according to claim 4 wherein the at least one translucent strip comprises a second translucent strip extending across the first face of the chamber at an angle to the first translucent strip.

6. A film phantom system according to claim 5 wherein the at least

one translucent strip comprises a third translucent strip extending across a second face of the chamber adjoining the first face of the chamber, the third translucent strip parallel to the first translucent strip.

7. A film phantom system according to claim 1 wherein the at least one translucent area comprises at least one translucent strip.

8. A film phantom system according to claim 1 wherein the body is cylindrical.

9. A film phantom system according to claim 1 wherein the body comprises a plurality of pieces of a solid tissue equivalent material and a location of the chamber within the body can be changed by rearranging the pieces of solid tissue-equivalent material.

10. A film phantom system according to claim 1 wherein the body comprises a fluid-filled shell and the cavity is defined within a box located within the fluid-filled shell.

11. A film phantom system according to claim 1 wherein the body has the shape of a human head.

12. A film phantom system according to claim 1 comprising a simulated lesion replaceably positionable within the cavity.

13. A film phantom system according to claim 1 comprising multiple layers of film in the cavity and separated from one another by multiple tissue-equivalent spacers.

14. A method of recording and verifying three-dimensional dose distributions, the method comprising:

providing a phantom including a tissue equivalent body surrounding a cavity;

loading multiple layers of film separated by multiple spacers having tissue-equivalent characteristics into the cavity;

delivering radiation to the body including the multiple layers of film;

before, during or after delivering the radiation to the body, allowing light to pass through translucent areas in walls of the cavity to expose a pattern of fiducial marks on edges of the multiple layers of film, the pattern being different for each of the multiple layers of film;

removing the multiple layers of film from the cavity;

obtaining multiple dose images based on the multiple layers of film;

using the patterns of fiducial marks exposed on the edges of the multiple layers of film to arrange the multiple dose images in sequence.

15. A method according to claim 14 comprising using the patterns of fiducial marks exposed on the edges of the multiple layers of film to orient the dose images.

16. A method according to claim 14 wherein exposing the pattern comprises exposing fiducial marks on at least two edges of each of the multiple layers of film.

17. A method according to claim 14 wherein exposing the pattern comprises exposing two fiducial marks on a first edge of each of the multiple layers of film, the two fiducial marks having a different spacing for each of the multiple layers of film.

18. A method according to claim 17 wherein exposing the pattern comprises exposing a third fiducial mark on a second edge of each of the multiple layers of film, the second edge adjacent to the first edge.

19. A method according to claim 14 comprising automatically ordering and orienting the multiple layers of film based upon the different pattern of fiducial marks on each of the multiple layers of film.

20. A method according to claim 14 comprising using the patterns of fiducial marks exposed on the edges of the multiple layers of film to determine a position of each of the sheets of film in a direction substantially perpendicular to the sheets of film.

21. A method according to claim 20 comprising using the patterns of fiducial marks exposed on the edges of the multiple layers of film to determine a position of each of the sheets of film in a plane of the sheet of film.

22. A method according to claim 14 comprising using the patterns of fiducial marks exposed on the edges of the multiple layers of film to determine a position of each of the sheets of film in each of two directions in a plane of the sheet of film.

23. A method according to claim 14 wherein delivering radiation to the body is performed when the body is in a known location relative to a source of the radiation and the method comprises determining locations of the sheets of film relative to the source of the radiation.

24. A method according to claim 23 wherein the source of radiation is a linear accelerator.